Trees

The Journal of American Arboriculture

Street of Upright American Elm, Rochester, N. Y. (Story Page 9)

USE OF TREES IN CAMOUFLAGE — *R. P. Breckenridge*

DIAGNOSIS: ROOT CROWN TROUBLES — *Forrest C. Strong*

Sept.-Oct., 1941 MUNICIPAL ARBORICULTURE ISSUE 25 Cents

The Man Who Sold by the Roadside

THERE was a man who lived by the side of the road and he sold hot dogs. He was hard of hearing so he had no radio. He had trouble with his eyes so he read no newspapers. But he sold good hot dogs. He put signs up on the highway telling how good they were. He stood by the side of the road and cried, "Buy a hot dog, Mister?" and people bought. He increased his meat and bun orders. He bought a bigger stove to take care of his trade. He finally got his son home from college to help him.

But then something happened. His son said, "Father, haven't you been listening to the radio? Haven't you been reading the newspapers? There's a big depression on. The European situation is worse. Everything's going to pot."

Whereupon the father thought: "Well, my son's been to college, he reads the papers and listens to the radio, and he ought to know."

So the father cut down on his meat and bun orders, took down his advertising signs, and no longer bothered to stand out on the highway to sell hot dogs. And his hot dog sales fell almost overnight.

"You're right, son," the father said to the boy. "We certainly are in the middle of a great depression."

MORAL: Spend your whole time keeping up with and pursuing your business and depression will not disturb you.

TREES • *the Journal of American Arboriculture*
Sells by the Roadside

TREES Magazine is a bi-monthly Journal published at Santa Monica, California, by Edward H. Scanlon, and is devoted to the furtherance of the technical and business administration of Trees (Street and Ornamental); Parks (Municipal and National); and Forests (State, National and Private), in the U. S. P. O. Box 886, Santa Monica, California. Subscription by mail, $1 per year; outside United States, $1.50. Advertising rates upon inquiry. Unsolicited manuscripts must be accompanied by postage return.

ALONG THE WAY

With . . .
EDW. SCANLON

■ DON WELCH V. P. and PAT PIRONE AUTHOR still think CORNELL'S football team could've licked STANFORD in the ROSE BOWL last year. My, my, AIN'T LOVE GRAND.

* * *

■ *There's a company in KERN COUNTY, CALIF., that raises WORMS FOR FISHERMEN. They call it the "KERN WERM FERM."*

* * *

■ Rode to WASHINGTON, D.C., with ROGER SOHNER. There's ONE SIGN we saw continually ALONG THE WAY that read "MACHINES WITH LUGS NOT PERMITTED." Whom did they mean?

* * *

■ *Many, MANY THANKS to Eleanor McGilliard, University of Chattanooga, Tenn., for her answer to my S.O.S. requesting seed of MAGNOLIA MACROPHYLLA.*

The seed was collected by one of her former students, EDITH ELBERFELD. We'll report details later on this too little used tree.

* * *

■ At least the Tennessee Highway Department is consistent. They plant all POOR SPECIES of trees along their roads—POPLARS, AILANTHUS, CHINESE ELM, ETC.

* * *

■ It was very nice of HERBERT HILL, SANTA ANA City Councilman, to buy the eats at a meeting of the executive committee of the WESTERN SHADE TREE CONFERENCE, held recently in Dale Griggs' stronghold.

Herb is the councilman in charge of parks, and VERY ARDENT too, which is swell for Dale. Buy your next suit at HILL'S HI-HAT HATTERY—he's a clothier.

* * *

■ *I'll never forget the look on TEXAS DOC BLUME'S face when he asked the orchestra, at the banquet of the 17th National Shade Tree Conference, to play "THE EYES OF TEXAS, ETC.," and they started up with "CALIFORNIA, HERE I COME"—must have been some dirty work someplace, eh? Doc?*

* * *

■ Congressman Randolph certainly was not very DECOROUS in his selection of a topic for the ADDRESS OF WELCOME at the 17th National Shade Tree Conference—he ranted about the dis-unity in the country, and blamed the wrong people.

* * *

■ *"Casanova" Hartney, of the firm HARTNEY and AMALIA (aborists par-excellence) calls we "ROMEO"—me, of all people. I just leave it to anyone present at the banquet in Washintgon as to who is the ROMEO.*

* * *

■ "Bob" Weakley played a SOLO in Washington—must be losing his touch.

* * *

■ *The only thing I don't like about Shade Tree Conferences is. THEY DON'T LAST LONG ENOUGH. You don't have a chance to MEET ALL THE INTERESTING PEOPLE you would like to.*

* * *

■ BOB THOMPSON, WIN KNIGHT, and DOC BLUME made a nice threesome COLLECTING GOLDENRAIN SEED for me on the grounds of the Congressional Library. Cheer up, boys, some day you can be PROUD OF A STREET of these trees in GOOD OLD SANTA MONICA.

■ *DOC COREY rightly called FORREST STRONG, "two gun." The MICHIGAN STATE pathologist with the BIG, WARM GRIN, CARRIES TWO CAMERAS. One with BLACK AND WHITE FILM, the other WITH COLOR. GOOD IDEA, but I had a TOUGH TIME RAISING the price of one.*

* * *

■ Enjoyed a PERSONALLY CONDUCTED TOUR by WES HOLLISTER through the JOHN DAVEY MEMORIAL ARBORETUM, outside of Kent, Ohio. A CHARMING PLACE with NATURAL WOODLANDS and two ARTIFICIAL LAKES. RED JACOBS is the MASTER MIND. Nothing like a LIVING tribute to the CHERISHED DEPARTED.

* * *

■ *Has anyone a GOOD PICTURE showing a TREE PRESERVATION OPERATION—feeding, cavity filling, well installation, lightning protection, spraying, that they would send us. WE'D LIKE TO USE THEM FOR COVERS. They should preferably be on the HORIZONTAL for our format.*

* * *

■ Talk about the VOICE OF ARBORICULTURE. If ever we need TO BE HEARD, I recommend WHISPERING VANCE, THE SHIELD of MOZURI. Not a bad WHIP, either.

* * *

■ *Stopped off in Cedar Rapids, Iowa, on my way to Washington, D.C., and met ED STEFAN, CITY COUNCILMAN and PARK COMMISSIONER. He's a great guy and is ALL STEAMED UP over the PROSPECTS OF FUTURE STREET TREE DEVELOPMENT now that he has DICK ALMAN as CITY ARBORIST. Promised to bring THE WHOLE CREW to the CHICAGO CONFERENCE*

* * *

■ TOOK A GANDER at the GREAT SMOKY NATIONAL PARK on the way home. The LIQUIDAMBERS, TULIPS, SOURWOODS AND RHODODENDRONS were particularly IMPRESSIVE in their native habitat.

* * *

■ *The trees GENERALLY throughout the country were GRAND THIS YEAR. LOTS OF RAIN. But the CHINESE ELM in the corn belt showed the effects of the SEVERE FREEZE of LAST NOVEMBER. Many DEAD and DYING. It was a SEVERE TEST, but proves they CAN'T TAKE IT.*

* * *

■ I FINALY succeeded in OBTAINING a number of CITY SHADE TREE ORDINANCES. However, would like to have A GREAT MANY MORE, so don't be BACKWARD, chums.

* * *

■ Too bad they don't take BETTER CARE of the STREET TREES in WASHINGTON. All the BUSINESS STREETS are LINED WITH TREES — IMPRESSIVE, BEAUTIFUL and PRACTICAL, but they need WATER and FOOD.

* * *

■ *In our travels through NORTH CAROLINA and TENNESSEE we LOOKED IN VAIN for some big Magnolia grandiflora in their NATIVE HABITAT. The BIGGEST ONE we saw was on the grounds of THE COUNTY COURT HOUSE in AUBURN, CALIFORNIA.*

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■ The *Grevillea robusta* (*Silk oak, Australia*) *is not a desirable tree. BILL NICHOLAS, PASADENA PARK SUPT., in discussing it with an OLD TIMER there GOT THE FOLLOWING; in the old days BEDDING STRAW WAS EXPENSIVE, so people planted THREE OR FOUR GREVILLEAS outside their STABLE DOORS and each day the litter would be RAKED UP FOR BEDDING.*

It will HAVE TO DO 'til a better one comes along.

* * *

■ Have had INQUIRIES re: hardiness of REDWOOD (*Sequoia gigantea*) in eastern states. Would like to hear from people who know of trees—their SIZE, LOCATION, CONDITION and APPROXIMATE AGE.

* * *

■ *A SIGNBOARD along the way says, "IT'S A GREAT COUNTRY, ISN'T IT?" Says Along the Way, "YEAH, BUT LET'S CONCENTRATE ON IT."*

* * *

■ *For the BENEFIT of many who were on the POTOMAC BOAT RIDE, especially JACK KENEALY, it rained during the trip —I'M TOLD.*

* * *

■ WIN PARKER says the ARBORISTS in NEW JERSEY are very much enthused over the functioning to date of their CERTIFIED TREE EXPERT LAW.

Incidentally, WIN and PHIL ALDEN almost came to blows over WHO WOULD PAY for that FISH DINNER at HOGATES.

Mention TREES to Advertisers . . . It helps!

September-October, 1941 *The Journal of American Arboriculture* Volume 4 — No. 5

EDWARD H. SCANLON, Editor
Editorial Office: Santa Monica, California

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; *a country without trees is hopeless*"

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CORDIALLY YOURS

STREET TREES GOOD BUSINESS

London, with German bombs raining down in cascades, plans ahead for a new London of broad straight avenues "lined with trees." America outwardly tranquil, but certainly with no bombs, dissipates a grand heritage of glorious street trees planted 50 to 100 years ago by a careless, thoughtless disregard for their welfare. Millions of dollars are wasted each year by politicians on useless things or for "pork barrel" projects, but let anyone propose a budget for street tree care and they tear their hair, yell economy, and look at you as if doubting your sanity.

The jury before whom this case should be tried is the business man. That is, the real estate agents, the retail merchants, etc., they stand to profit most from an attractive city that people will want to live in; a city that will attract tourists and be so all-around attractive as to assure a higher income class of buyers. Only well kept, intelligently selected street trees will do this to a town or city: no other single factor can.

In addition to the commercial value of the 50 to 100 year old street trees to a city, another argument that the street tree proponent should use is to be found detailed in Major Breckenridge's fine article on page 7 of this issue. It has to do with trees as camouflage for the defense of cities against aerial attack.

We are still living in a rather primitive world, which is evidenced by current events in Europe. Aerial warfare in the future will be manyfold more destructive than it is today, therefore, the future need for more widely spread out communities and a greater use of trees seems like just plain common sense. This makes a splendid logical sales talk for the City Arborist which should be used today, now—don't wait until the scare is over; one of the greatest faults of the human race is procastination and although Mexico is supposed to be "manana" land they have no corner on the market.

City Arborists and other proponents of street trees have gone about securing funds for this purpose in the past on the basis of esthetic values of trees. That is absurd and makes the selling ridiculously difficult. Put it on a *business* basis—higher real estate values; higher income buying groups; tourists attracted by the beauty of the town, many of whom may return to make the place their home; fine residential areas that attract new businesses because of the advantages to employees. Well kept, fine streets of trees do these things for a city. Therein lies the basis of *punch* for your sales talk. Use it!

MAGNOLIA SOFT SCALE

In appearance, habits and the kind of damage it does, Magnolia Soft Scale is very similar to the species infesting the Tulip Tree.

This so-called Magnolia Scale as well as the Tulip Tree Scale is soft covered Scale which you will find thickly colonized on the under side of the branches; they are grayish to brown in appearance . . . the young are more gray than brown but the color deepens as they become older. The leaves and branches infested become sickly and blackened in appearance. This Scale is prominently raised about ¼" long and ⅛" wide.

In the latter part of the summer, or early fall, the young will emerge from underneath their covering and can be observed crawling about and settling on bark, twigs and leaflets. After they have set themselves, they will remain in the same place through the winter; then, as soon as spring comes they will begin to feed and grow, producing a new generation, and thus the cycle completes itself by the fall of the year.

Fortunately, we have only the one generation of Magnolia Scale to confront; this is also true of the Tulip Tree Scale. And the reason we have combined the two in this one treatise is because the habits, appearance and characteristics are the same. Likewise, the control measures for the two are identically the same.

We advocate spraying for both the above species of Scale and throughout the South the best time for this is about the middle of May breaking into June. Use CALSUL DESTRUXOL Emulsion, which is a combination of lime and sulphur and oil; in the proportion of 1 gallon to 50 gallons of water.

Destruxol Bulletin

GREEN SCUM IN PONDS

Green Scum in ponds can be checked by using finely powdered copper sulphate (blue vitriol) at the rate of ¼ oz. to 15,625 gallons of water. This equals 1 lb. to 1 million gallons.

The diseased parts should be removed several inches below the wilted portion. Since this trouble can be transmitted to healthy wood or healthy plants through pruning tools, the tools should be frequently wiped off with a rag saturated with a solution of 1 to 1000 Bichloride of Mercury.

Since infected plants are a source of contamination of healthy ones, they should not be neglected. If they do not respond to treatment they should be removed.

The number of gallons of water may be calculated by computing the number of cubic feet contained in the pond and multiplying this figure by 7.5, which is the number of gallons in a cubic foot.

The copper sulphate should be placed in a flannel bag of heavy texture, and should be trolled rapidly through the water until the chemical is completely dissolved.—*Twigs.*

Experiment for Moisture And Fire Control

Because the loss and damage to roadside trees by fire is quite heavy each year, H. Dana Bowers, Landscape Engineer, California Division of Highways, has this past summer been experimenting with large squares of roofing paper as shown in the picture. The idea is to prevent the growth of weeds immediately around the trunk.

Young tree showing tar paper shield for prevention of moisture evaporation and as weed deterrent

The paper is cut to the center on one side with a hole cut for the trunk. This method of weed control and moisture retention has been used for years in strawberry and pineapple culture, as well as in orchard work, however, the idea was applied to highway trees by Mr. Bowers as one of a series of experiments he is conducting to reduce maintenance expense.

The results to date are very satisfactory, he reports, being particularly effective in conserving soil moisture.

NATIVE TREES OF GEORGIA

The above is the title of an interesting publication authored by G. Norman Bishop, School of Forestry, University of Georgia. The book covers 92 species chosen for their commercial importance, although a number of ornamentals are included.

The illustrations are line drawings. It is bound in an attractive green paper cover.

NURSERIES HANDLING UPRIGHT TREE STOCK

The series of discussions on Upright forms of trees that has featured each issue of TREES to date this year has elicited a great many inquiries as to where these varieties may be obtained. The authors of the series, Malcolm Milne, City Forester, and Jacob Gerling, Asst. Supt. of Parks, both of the Rochester, New York, Park Dept., inform TREES that the only nursery that, to the best of their knowledge, is producing the Upright form of *Acer platanoides* is the Brown Brothers Co., 891 Garson Ave., Rochester.

The Jackson & Perkins Company of Newark, N. Y., we are told, list a fastigiate variety of one of the soft maples, presumably this is the red maple, *A. rubrum columnare.*

Quercus robur fastigiata, the Upright English Oak, is available from the following: Kallay Bros. Nursery, Painesville, Ohio; Kingsville Nurseries, Kingsville, M; Ambler Nurseries, R. D., Ambler, Pa; Andorra Nurseries, Inc., Chestnut Hill, Pa; Bobbink & Atkins, Rutherford, N. J; Bohlender Nurseries Co., Tippecanoe City, Ohio; Champion Nurseries, Perry, Ohio; Cole Nursery Co., Painesville, Ohio; Hilltop Nurseries, Casstown, Ohio; W. A. Natorp Co., Cincinnati, Ohio; Princeton Nurseries, Princeton, N. J; and the Siebenthaler Company, Dayton, Ohio.

Henry Kohankie & Son Nurseries of Painesville, Ohio, list several varieties of fastigiate trees in the larger sizes but the varieties are not listed.

Acer rubrum columnare may be obtained from I. E. Ilgenfritz Sons Co., Monroe, Mich; Kingsville Nurseries, Inc., Kingsville, Md.

Fagus sylvatica fastigata may be obtained from the Kingsville Nurseries, Inc., Kingsville, Md; the Tingle Nurseries, Pittsville, Md.

Robinia pseudoacacia pyramidalis may be obtained from the Tingle Nurseries, Pittsville, Md.

Acer saccharum columnare is handled as lining-out stock only by the Kingsville Nurseries, Inc., Kingsville, Maryland.

Ginkgo biloba fastigata may be secured from the following: Andorra Nurseries, Inc., Chestnut Hill, Pa; Bobbink & Atkins, Rutherford, N. J; Boh-

(*Continued on page* 18)

N. S. T. C. to Chicago In 1942

Somehow or other, when a Shade Tree Conference is over, don't you feel all knocked down and dragged out? You're glad it's over: sigh a deep sigh and go back to work. It takes two or three weeks to get back in stride, then the steady grind. But then one day you get a letter from a fellow in Illinois and he says something about "there's going to be another Shade Tree Conference" . . . "in Chicago" . . . "the eighteenth" . . . "just think of it" . . . "Bill Rose, Village Forester, Hinsdale, Ill., chairman of everything." Poor Bill! is your first thought, then suddenly you begin to think about the good times and the good fellows you've met at St. Louis, Detroit, New York, Washington, and bingo—the infection is back!

Why doesn't every Arborist, City Forester, Park Superintendent, or anyone who has tree preservation problems, attend the Conference and belong to it?

Well, anyway, the seventeenth National Shade Tree Conference, which ended August 29 in Washington, was perhaps the most momentous of the series. It marked a definite change of policy in the adoption of a new constitution. The most important feature of this change lies in the granting of voting power to all members regardless of occupation or past classification. Unquestionably this will tend to increase the membership in related fields of tree preservation, such as City Foresters, Park Superintendents, Nurserymen, Golf Course and Cemetery Superintendents; they all have a deep interest in tree preservation. The general policy of the Conference will be to create a wider public interest in and knowledge of the uses and value of shade trees. The component groups will have their own special meetings, such as the National Arborists Association and the newly inaugurated informal meeting of City Foresters, which will be held on the same evening as the N.A.A. meeting.

The field demonstrations at Hains Point was a model of precision. Each event moved right on schedule, which combined with the balmy California-like weather that prevailed, made a pleasant afternoon.

A very interesting pilgrimage to Mount Vernon was featured by the planting of a memorial Elm. The picture captioned "Men at Work" is very rare and should be preserved. Mount Vernon is interesting in addition to its historical aura. The trees are a fine exemple of what intensive care will obtain: all are protected by lightning equipment and an annual maintenance program is the order involving pruning, feeding and spraying.

Men at work . . . President Cory, Bob Thompson and L. C. Chadwick put the finishing touches to memorial tree planted by Seventeenth National Shade Tree Conference at Mount Vernon

The seventeen papers on the program comprised the most valuable series of discussions presented to date. They will be reproduced in the Annual Proceedings. This indispensable volume should be in the hands of everyone engaged in any phase of tree preservation, and in the future, according to an article of the new constitution, may only be obtained by members. You are strongly urged to consider membership and contact Dr. L. C. Chadwick, Executive Secretary, at Ohio State University, Columbus, Ohio, for details.

The next Conference will be held in Chicago next August. Wm. E. Rose, Village Forester of Hinsdale, Ill., is general chairman. Let's all start working with "Rosy" now for a grand meeting.

A fine array of exhibitors consisting of some twenty firms displayed the latest equipment, materials and machinery used in tree preservation:

American Chemical Paint Co., Ambler, Pa.

Atkins & Durbrow, Inc., 165 John St., New York, N. Y.

Bartlett Mfg. Co., 3028 E. Grand Blvd., Detroit, Mich.

John Bean Mfg. Co., Lansing Mich.

F. W. Bolgiano & Co., Washington, D. C.

California Spray-Chemical Corp., 150 Bayway, Elizabeth, N. J.

Dow Chemical Co., Midland, Mich.

Fitzhenry-Guptill Co., East Cambridge, Mass.

Friend Mfg. Co., Gasport, N. Y.

Fruit Growers of Chester County, Inc., West Chester, Pa.

Grasselli Chemicals Dept., E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

Hardie Mfg. Co., Hudson, Mich.

Jackson & Perkins Co., Newark, N. Y.

Karl Kuemmerling, 712 Renkert Bldg., Canton, Ohio.

Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore, Md.

H. E. Muench, Stamford, Conn.

H. K. Porter, Inc., 6 Ashland St., Everett, Mass.

B. G. Pratt Co., 50 Church St., New York, N. Y.

Protex Industries, Inc., 500 Fifth Ave., New York, N. Y.

Tobacco By-Products & Chemical Corp., Louisville, Ky.

F. H. Woodruff & Sons, Inc., Milford, Conn.

MONEY SAVER FOR ARBORISTS AND PARKS

"Portable Power for Pneumatic Equipment" is the title of a new folder which should be of interest to every one interested in shade tree care and also to park executives in charge of repairs and construction. It contains a number of interesting illustrations showing how various types of work are done more efficiently with pneumatic tools as well as specifications. A few of the corcerns and cities using this equipment are:

Killen & Hall, Arborists, Darien, Conn.

Town of Greenwich, Conn., Tree Dept.

City of Waterbury, Conn., Park Dept.

Goodall Tree Expert Co., Inc., Portland, Maine.

Henderson & Herndon Tree Co., Inc., Beverly, Mass.

Town of Weymouth, Mass., Tree Warden.

City of Worcester, Mass., Park Dept.

R. F. Harold & Son, Arborists, Tenafly, N. J.

Heflin & Storms, Arborists, Wyckoff, N. J.

A copy may be secured without charge by writing to the P. K. Lindsay Company, 210 Broadway, Everett, Mass.

The Use of Trees In Camouflage

By R. P. BRECKENRIDGE
Major, Corps of Engineers
Fort Belvoir, Va.

Aerial view of a well-planted city. Trees screen this area and render it practically immune to aerial attack

Until comparatively recently, the problem of National Defense involved armies, artillery and bullets. This is no longer true, and today war is waged by entire nations and every living inhabitant of those nations. The battleground is the home, the factory and cities and villages hundreds of miles from the enemy.

This has given rise to "passive defense" which includes all of the non-combatant practices and techniques used in the face of possible destructive enemy activity. The importance of passive defense is clearly illustrated by the fact that the British Isles, besieged for many months by overwhelmingly superior forces, are today unconquered and unbeaten.

Camouflage is one of the most important of all passive defense measures. Much of the camouflage of the last war was paint, collected brush, and other means of deception used largely in front line areas. Today the application of camouflage principles throughout the entire land is an important factor in our National Defense program. While there may be no cause for immediate alarm, it is the duty of every citizen to be aware of the possible danger and to be alert to the possible need for the general application of camouflage, if and when the need actually arises.

Fortunately, sound camouflage principles are similar in many respects to the doctrines preached for many years by progressive civic planners. It has long been felt that the people of a community can enjoy a more comfortable, healthful and happier way of living if their communities are decentralized; if their homes, offices, and factories are dispersed and separated into smaller units; and if all construction is not regimented in straight lines but is scattered irregularly and casually over the landscape. The proper use of trees and other natural material is an important aid in carrying out the above objective. It is interesting to note that the same principles are fundamental in any modern scheme for passive defense camouflage.

The importance of *decentralization* has been recognized for many years. It involves the separation of communities into smaller units to provide for better living and better working conditions for all. Its genesis was probably a little book entitled "Tomorrow a Peaceful Path to Real Reform," by Ebenezer Howard, published in 1898. The stated purpose of the book was to organize a migratory movement from overcrowded centers to sparsely settled rural communities and this principle has been preached by progressive city planners ever since.

The application of decentralization to camouflage is obvious. The smaller community provides a smaller target for enemy aircraft. It is a vastly more difficult operation for an enemy to wipe out a number of small communities than it would be to effect the same damage if the communities were united as one large municipality.

A city where tree planting has not been considered important. Note the vulnerability and visibility to aerial attack

Dispersion, or the separation and spacing of buildings, is similarly important. A bomb falling on a crowded tenement area or upon a large factory covering many acres of ground will obviously do far more damage than it would on an area of small separated homes or an industrial area consisting of many small factory units. From a concealment point of view, it is axiomatic that it is easier to reduce the visibility of the sum of the parts than it is of the larger whole.

Irregularity of units is the third characteristic of importance both to modern city planning and to camouflage. Only in army cantonments where the speed of construction is considered of maximum importance are buildings laid out with the stiff lines of the tee square. Modern planning dictates that buildings shall be scattered irregularly throughout the area, taking advantage of the contours of the grounds, utilizing the trees and natural foliage present and thus blending into the terrain rather than giving the effect of being superimposed on it.

Trees and natural foliage are obviously of prime importance in any camouflage scheme. As the basis for almost every camouflage plan is the attempt to blend the installation into its surroundings; trees and other foliage contribute greatly to this deception. They add to the effect of natural irregularity because of their own shape and form and because of the shadows which they cast. Trees are also of great assistance in breaking up the straight lines of buildings, roads

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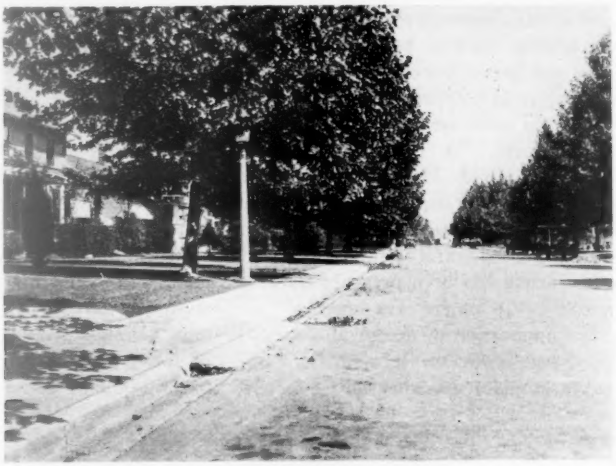
Street Trees On Private Property

By Fred N. Evans

Superintendent of Parks
Sacramento, Calif.

The planting of street trees inside of the sidewalk is not an altogether new idea, and yet it is sufficiently new to warrant comment from those who have had experience in planting and caring for trees so planted.

The method of planting street trees on private property has been practiced quite generally in Sacramento for the past twenty-five years, as it has in some other cities. It has been prompted by the custom of creating sidewalk and street adjacent to one another, i.e., without grass space between. It is an earmark of modern subdivision planing whose immediate aim is to save space formerly devoted to planting next to the curb, and to throw such space into apparent lot depth. This makes for an apparently wider street, since trees are set further back from street center line than they would ordinarily be. The front property line may be immediately next to the sidewalk, or it may be a foot, or sometimes even up to eight feet back from the curb, depending upon the subdivision designer's plan. What appears thus to be private lawn is not all privately owned, although each private owner takes care of it to the sidewalk.



Street trees in Sacramento planted on lawn back of sidewalk

An obvious advantage of such a street cross section is that it allows for future street widening, and it increases the apparent street width.

As the average lot width is fifty feet, it is natural to plant one tree to each lot, and this tree would be spaced, if wisely done, in such a position that the sun's heat would be diminished by the tree, and about twelve feet from the lot line so as not to interfere with garage entrance.

Street trees planted on private property may be planted in the usual way, in a straight line, or irregularly. The possibilities of irregular planting, especially in a part of town where a rural aspect is to be suggested, is an interesting thing at present, and tried only on a few streets in Sacramento.

The disadvantage of such planting should be stated. It makes care of trees somewhat difficult. Some of the liveliest days in our Sacramento Tree Division have been when we have undertaken to trim such trees. Even if the City department has been the one to plant, the owner sometimes forbids our touching them. We now make it a rule to plant, only on condition that we may be free to trim and care for trees.

To state another disadvantage: where grass dries in late spring and is not uniformly kept cut on vacant lots, there is considerable danger from fire injury, where lots are burned off. With all the precautions and threats in the world, fire squads are sometimes careless as to wetting down and in calculating on the heat carrying property of heat laden wind.

Where, according to law, an owner may do as he wishes with all plant ma-

(*Continued on page* 18)

THE *City Arborists'* COLUMN

Municipal Men Meet In Washington

By Edward H. Scanlon

Too little importance has been placed on the value of street trees in their relation to business activities and real estate values of a city. This may be the fault of the City Foresters who are directly affected—let's place the blame there anyway for the time being.

At the recent National Shade Tree Conference in Washington, twenty-one people directly interested in Municipal Arboriculture answered a call to get together and talk things over. It was a very interesting meeting, lasting about two hours and showed a definite need for such a gathering annually at the National Shade Tree Conference. No formal organization is planned, however it was the unanimous opinion of the group that the event be made a part of the annual program and to be held on the same evening of the National Arborists Association meeting, so that there would be no clash with other events. This was discussed with Secretary Chadwich, who was very enthusiastic over the proposal and agreed to indicate the meeting on next year's official program.

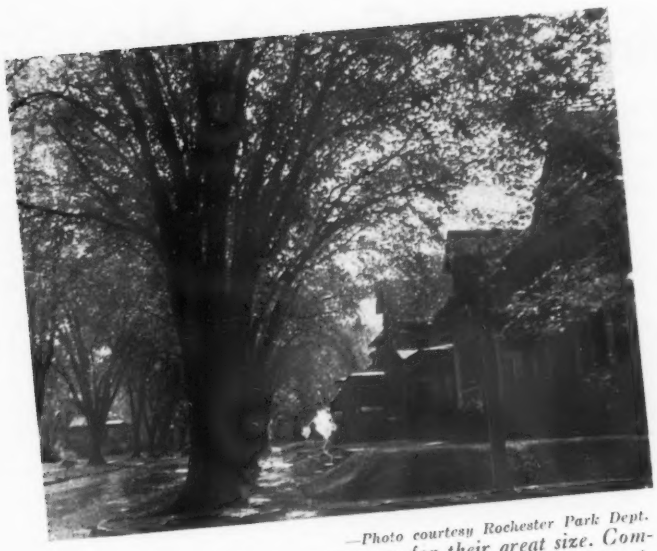
It was generally agreed that more publicity is needed to promote a more general realization of the great value of street trees to the cultural and business activities of a city. This column in TREES was endorsed and will be kept active by correspondence and contributions from the group. During the coming year, before the Chicago Conference, definite plans for the future will be considered by all who were present and some tangible policy may be forthcoming. Those present at the meeting were:

F. M. Forsberg, Asst. Supt. of Parks, Norfolk, Va.

M. A. Milne, City Forester, Rochester, N. Y.

W. H. Schreiber, Asst. City Forester, Detroit, Mich.

(*Continued on page* 17)



—Photo courtesy Rochester Park Dept.

American Elm on street too narrow for their great size. Compare this photo with the in-scale planting of Upright Elms in the cover picture

Improved Elm Is Upright Form

By MALCOLM A. MILNE, *City Forester*
and JACOB GERLING, *Asst. Supt. of Parks, Rochester, N. Y.*

UPRIGHT AMERICAN ELM

(*Ulmus americana ascendens*)

Of the very widely used street trees, that old standby, American Elm, is a time-proven species. Vaulting many of our older roads and avenues with its lofty, cathedral arches this grand native tree is perhaps used more often than any other for street planting and is a most desirable choice where space permits practical, advantageous use of this type of tree. But even this beautiful, natural canopy is too often misused. There are far too many city streets where sidewalks are upheaved by its heavily buttressed trunk, lawns are impaired by its massed tops, and the upper branches overhang roofs and brush the gables of homes. However, we can now have all the good traits of the elm without fear of future development bringing the bad features of the parent species when used in too limited spaces. This is possible by using the newer form of the species, *Ulmus americana ascendens,* which gives us an ideal variety for the narrow streets of our cities and for small-area planting.

Upright American Elm is a variety with a definite, fixed, upright growth habit, which not only retains all the hardiness of the species, but is far less susceptible to damage from the elements. The multiple, erect branches offer little resistance to wind and minimum leverage to sleet and snow.

The leaves of this variety are similar in shape and texture to those of the parent species, but may be slightly smaller. The bark is light gray and smooth for a number of years, gradually breaking into shallow fissures and long, flat, vertical ridges. The bark retains its smoothness for a longer period and the fissures are less deep than the species. Crown shape may be described as a narrow V or inverted pyramidal. The trunk is slim without the noticeable butt swell of the species.

Propagation is by budding onto seedlings of the parent species. Growth is rapid.

This tree prefers a moist, well-drained, sandy-loam soil, although it does well in poorer locations. In light nursery soils it will develop long running roots with few fibers if not root-pruned periodically.

The variety is subject to attack by the same insects which infest the species, but seems less susceptible to the diseases of elms, probably due to its usual vigor. The elm leaf beetle and European elm scale are its principal enemies.

Contrary to most elms, the maintenance cost of this variety is low. The tree holds its shape well, and may be trimmed for height without detrating from its beauty. In fact, such trimming adds to its charm. Crotches formed by the larger branches may require bracing to prevent splitting. This variety does not send out as many suckers from adventitious buds as does the parent species—a propensity that has caused many gray hairs in the weary heads of our city foresters.

Upright American Elm requires more space than many of the fastigiate forms. For this reason it is particularly valuable for the ordinary residential street where the American Elm would prove too massive, but where a reasonable amount of shade is desired. Trees thirty years old are proving very worthwhile in such locations. See cover picture.

Upright Blue Beech. A fine specimen that is described in the text

Most of the credit for the development of this variety belongs to Bernard H. Slavin, Superintendent of Parks, Rochester, N. Y. He was responsible for budding hundreds of the trees from two original discoveries in the Rochester area.

UPRIGHT BLUE BEECH

(*Carpinus caroliniana ascendens*)

As generally known, the common

(*Continued on page* 18)

Trees...

Diagnosis Series No. 3: Root

By FORREST C. STRONG
Department of Botany
Michigan State College

Troubles affecting the trunk, the root crown or the root system are seldom discovered until leaf injury or the dying of branches bring about examination of the tree for the cause of the ailment. This is especially evident with shade tree troubles for until the leaves are affected, little concern or alarm is felt or is there any realization that the tree is suffering from an abnormal condition.

The region of the root crown is not a very well defined place but a consideration of the diseases and troubles primarily affecting the base of the tree trunk and the roots extending from it is well worth while. These diseases and troubles will be discussed under two headings: non-parasitic diseases and troubles which include those caused by adverse conditions of climate and soil, maladjustments of the tree itself, and mechanical injuries, and parasitic diseases which include those caused by parasitic fungi and bacteria.

NON-PARASITIC

Collar Rot—The killing of the bark at or near the soil level has been found to be a form of winter injury. Deciduous trees in the northern half of the United States enter into a rest period which more or less roughly coincides with the dormant season. Various maturation and hardening processes take place prior to this rest period which make the tree resistant to low temperatures of the winter or dormant season. These maturation processes take place first in the twigs and outer branch parts and progress inward and downward so that the tissues at the bases of branches, at the crotches, and the basal portion of the trunk are last to become mature and capable of living through low temperatures without injury. If unseasonable low temperatures occur before this hardening of the tissues is completed, there may be killing of the inner bark and cambium. This accounts for crotch cankers and collar rot. Semi-hardy trees or trees whose growth has been stimulated too late in the autumn are often affected.

Killing of the bark at the ground level may involve only small areas or it may extend completely around the trunk making a complete girdle. Treatment of such injuries consists of bridge grafting if the girdling effect is extensive. Smaller wounds should have the dead bark removed, the exposed wood painted to protect it from invasion by wood rotting fungi and boring insects. Fertilization of trees affected by this type of winter injury will be beneficial in aiding them to recover. Certainty that they have sufficient soil moisture is also important.

Exposure of roots by paths made in the vicinity of a tree

Girdling Roots—In the planting of a tree all of the roots may not be properly arranged, or by chance a lateral root may develop in the vicinity of the root crown. A root which lies close to the root crown but not extending directly away from it may in time increase in diameter until with the concurrent growth of the root crown contact between the two takes place. As these two structures continue to increase in size compression of the bark of both contacting surfaces takes place. In time a depression may occur in the root crown caused by the development of the girdling root. Grafting of the two occurs in some cases.

Contact of the two bark surfaces with the resultant compression of the bark tissues causes a decrease and final stoppage in the functioning of the bark tissues involved. If grafting of the lateral root with the base of the trunk or root crown takes place the resultant benefits to the tree are small because of the right angled arrangement of the girdling root tissues. There is a general impairment of the normal movement of water, nutrients and food material in this region of contact. Such impairment results in the reduction in the vigor of the tree, which is reflected in a reduction in size and number of the leaves and a general debilitated appearance of the tree. The degree of encirclement of the girdling root determines the eventual extent of seriousness of the injury.

The presence of girdling roots below the soil surface may be suspected if the trunk of the tree ascends straight up from the ground level or is slightly concave on one side instead of exhibiting a normal swelling out of the trunk as it descends into the soil. In suspected cases the soil should be removed to a depth of a foot or more and the basal portion of the trunk examined. Removal of girdling roots even though they may be well embedded is necessary to the ultimate

—*Photos courtesy the Author*

The result of lawn mower injury to an Elm tree

ot and Root Crown Troubles

health and vigor of the tree. Treatment of the resultant wounds are necessary to reduce incidence of wood rot and entrance of insects.

Injury by fills or raising of the grade—This is one of the most common causes of injury and loss of trees around new home sites, in park areas, and along highways. The situation is improving in the city, state and national parks, and also in highway construction because

Shoestrings or rhizomorphs of Armillaria mellea as they have developed beneath the bark. In the upper center may be seen a flat white mycelial sheet of fungus

competent arborists work with contractors and construction engineers to make suitable arrangements for the proper treatment of trees about which fills are to be made *before* the grade is raised. It is unfortunate that so many contractors who build houses and other buildings are not versed in the basic principles of tree structure and growth. All too often when the arborist arrives on the scene, irreparable damage has been done by the making of fills around trees without due regard to the proper manner of doing it.

The depth of the fill, the kind of soil used together with the kinds of trees involved all determine the possibility of survival of the trees. Willows, poplars and elms, for example, are best able to readjust themselves to fills made about them. Maples, beeches and oaks are examples of trees which do not easily acclimate themselves to straight dirt fills. Naturally shallow depth fills are less injurious. Loose porous soils such as sandy loams are least injurious. Clay soils should be avoided since a 4 to 6 inch layer of clay is sufficient to cause the death of a tree by suffocation.

The chief cause of injury by filled soil is that of suffocation resulting when roots are buried below their normal growing depths. Lack of aeration in such soils affects the normal intake of nutrient chemicals by the feeding roots. It also affects the normal chemical and biological processes which go on in the upper strata of soil whereby chemical compounds composing the soil become slowly changed to salts forms capable of absorption by the roots.

Since the specifications for the proper making of fills or raising of the grade about trees takes considerable space and because it has been handled competently by several authors it will not be considered here.

Injuries by lowering of the grade around trees—Four things take place when soil is removed from above the roots of trees: Valuable top soil is removed in which quantities of plant nutrients are located, feeding roots are exposed to drying out or to low temperature injury, the soil water table is deranged to the detriment of the tree, and roots not exposed may be shifted or torn from larger roots by movement of people or vehicles over such areas.

Exposure of the root system is so evidentally an injurious procedure that the grade is usually left in its original state around the tree. The greatest danger is that insufficient area is left at the original grade level.

Compaction of the soil over the root crown—The walking about of people over areas under trees or the parking of automobiles in such places may cause a compaction of the soil with resultant injury of the roots from suffocation because of lack of aeration, making of the soil impervious to penetration of rainfall waters, or actual mechanical injury of the roots themselves. It is a common sight in parks made from natural woodland forest stands to see many roots exposed for several feet in length. These have appeared after much tramping has lowered the soil level and by loss of the compost-like duff and litter which normally covers the forest and woodland floor.

Where possible the causes must be removed. Shallow spading of the top soil followed by the addition of a two to three inch layer of loam soil mixed with compost to cover the exposed roots will aid in loosening the packed down original soil and will return much needed humus to the area.

Mechanical injuries at the base of the trunk—The lawn mower still holds a prominent place as a bark remover at the base of the trunk of the tree. It has been outclassed by the automobile scorings of the bark a little further up on the tree trunks. Fire scars are for the most part found only in the forest and woodland stands of trees. They come under consideration however when homes and grounds are established in such wooded areas.

Bruised, torn and injured bark should be cut away, the wound "traced" and painted with a good wound dressing to prevent decay of the wood and invasion by insects and to encourage callus formation. Removal of the sod close to the base of the tree will prevent to a large extent lawn mower injuries. Fire scars should have the burned and killed bark cut away, the charred wood chiseled out with proper after treatment of the wound. Charred wood will have cracks in it which will permit wood rotting fungus spores to lodge, germinate and the resultant hyphae to penetrate the sound wood behind the burned area.

Girdling at the ground level by rodents—Young trees which have thin, succulent bark are subject to injury by rodents such as field mice, pocket goph-

(*Continued on next page*)

DIAGNOSIS SERIES No. 3

(*Continued from preceding page*)

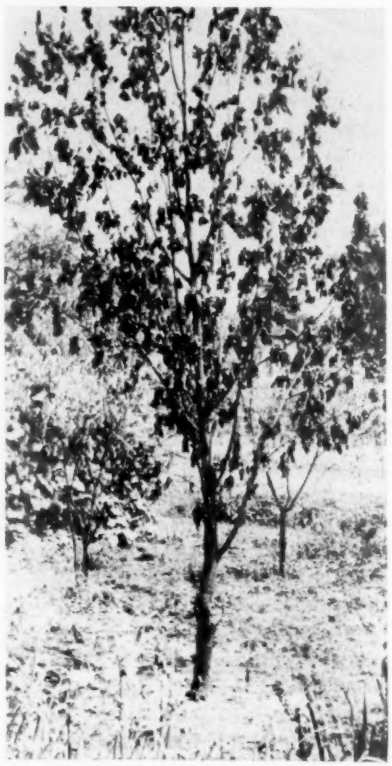
ers and rabbits during winters of heavy snowfall or where trees have been mulched with strawy material. The control of this type of injury is possible with small numbers of trees by the use of quarter inch mesh wire screen protectors at the base of the tree. The use of strawy mulching material in which mice can harbor must be avoided. In nurseries where there are many young trees and shrubs the problem becomes a difficult one. Use of rodenticides is advocated by some while rodent deterrents are recommended by others. Plain paraffine waxing and Dowaxing has been successful in many cases.

PARASITIC

Shoestring Root Rot—The root rotting fungus given most prominence largely because of its distinctive parasitic habit, is the shoestring fungus, or the honey mushroom fungus, *Armillaria mellea.* This fungus is capable of attacking living roots and can penetrate sound healthy bark. It can also enter the root system through dead roots and through injuries where the bark has been removed. After a living root becomes infected, the tissues of the inner bark, the cambium and the wood immediately adjacent are killed and there the fungus develops a thin white mycelial mat or sheath between the bark and the wood. This thin, white layer is very characteristic and is a diagnostic symptom for the presence of this fungus. It is during this stage that *Armillaria mellea* kills the roots by a girdling action. After the living tissues are killed, the fungus proceeds to penetrate into the woody structure of the root, and the sound hard wood is rotted to a soft white tinder-like condition. Sapwood and heartwood of the roots and the basal portion of the trunk are decayed. The white mycelial sheets become thicker and in places develop flat strands which soon become dark colored, then black. These are the "shoestrings," which branch and elongate, pushing out through the bark and spreading over its surfaces. They also migrate out into the soil and may grow through the soil some distance. If they come in contact with a root of the same tree or of a neighboring tree, a new focus of infection is set up. The presence of these shoestrings is the second diagnostic symptom of this parasite.

Beside rotting the roots near the root crown, this fungus progresses both up into the trunk three to eight feet or even more and also progresses outward from the crown into the smaller roots.

Fruiting bodies develop after the fungus has become well established in the roots. They appear in the late summer and early autumn. Notable characteristics of these mushrooms is their habit of growing in close clusters with their stem bases pressed together. The mushroom is honey yellow in color, tending toward a muddy tan. There is a ring just beneath the cap on the stem or stripe. Spores are carried from the mushrooms or fruiting bodies by air currents and furnish a means for the spread of this fungus long distances to new hosts. Local spread of this honey mushroom fungus to nearby trees is by means of the shoestring-like rhizomorphs and by infection of healthy roots by contact with rotting roots (or rotted roots). If trees are set in place of ones which have been recently killed by this fungus, they may in turn become infected by rhizomorphs or by contact with rotted roots which have not been removed from the soil.



Tulip Poplar killed by a ten-day submergence of the roots under flood waters

This fungus can attack both hardwood and coniferous trees. When a conifer is attacked, another characteristic symptom is an abnormal outflow of resin about the base of the trunk which cements the needles in the duff and the soil into a hard mass.

Control of infections caused by this root killer and wood rotting fungus is very difficult. The loss of an infected tree is almost certain especially if the tree is in a poor state of vigor. In cases where the presence of this fungus is discovered early in its activities, a drastic surgical operation involving removal of invaded roots and butt wood with proper treatment of the resultant wounds may save the tree. If too many roots are affected, a complete removal of the tree, roots and all is best, before nearby trees may be attacked. In such cases complete removal of the root system is imperative even if the soil has to be removed and carted away.

In California, successful control in citrus groves has resulted by treatment of the soil with carbon disulphide while the affected trees are still standing. One and one-half ounce doses of this chemical are planted at 8 to 9 inch depths at 18 inch staggered intervals. The top soil is kept moist or wet soil is used to cover the surface. From 30 to 60 days are allowed to elapse to insure killing of the fungus in the tree roots and in the soil. The dead trees are then removed and can be replaced immediately. Little treatment with this chemical has been done in the eastern part of the country. The method most commonly resorted to is that of first removing the affected tree then treating the soil in which the roots extend with formaldehyde diluted 1 part to 50 parts of water. The surface of the soil is covered with wet sacking or with canvas for five to ten days. After such a treatment, the soil should be aerated for several weeks to insure complete removal of the formalin gas. This treatment cannot be used where other trees and shrubs are close by. Digging a trench about the outer limits of extension of the roots of an affected tree, leaving the trench open is of dubious value although this method may prevent spread to valuable trees nearby.

Vigor of the tree is an important factor with this root rot fungus as with others. It is believed that healthy vigorous trees are not subject to attack. The col-

(*Continued on next page*)

lection of evidence is such that the matter is still controversial. In forest stands where *Armillaria mellea* is abundant on stumps, no loss of trees is apparent if they are in a good state of growing vigor.

There are several other wood rotting fungi which do destructive work in the region of the root crown and the base of the tree. *Polyporus schweinitzii,* the velvet top fungus, attacks the roots of conifer trees or enters the base of the tree through fire scars or other wounds. The resultant decay is a red charcoal rot. This fungus is suspected of being able to attack living roots in the same manner as the honey mushroom fungus except that it does not produce the shoestring structure. White pine trees on unfavorable sites are subject to attack. After killing and rotting the roots, this fungus progresses up into the heartwood of the tree. Rot of the roots and weakening of the basal heartwood favors wind-throw of affected trees long before they are killed by progressive decay of the root system. The fungus produces fruiting bodies about the base of the tree above rotted roots. They are brown, circular, 3 to 10 inches across, and have a flattened funnel-shape. The top portion has a brown nap of mycelial growth resembling brown velvet only much coarser in texture. These are not produced until the fungus is well established and the rot is well advanced.

Little work has been done to control the progress of this wood rotting fungus. Treatment of affected trees has apparently never been attempted. Removal of the affected tree and as much of its root system is imperative to reduce the rapidity of spread to nearby coniferous trees. Destruction of the fruiting bodies is, of course, important as it is with all similar fungi.

The artist's conk fungus, *Fomes applanatus,* attacks the exposed roots and buttress roots of many hardwood trees. This organism enters through wounds and produces a white mottled rot of the heartwood. It is also capable of rotting sapwood. This fungus is very abundant everywhere on stumps and logs. It produces literally bushels of flat shelving fruiting bodies annually, which promote the artistic efforts so often to etch a picture on the pure white undersurfaces. Destruction of all of these fruiting bodies wherever found would tax the best efforts of our New Deal promoters to the utmost. Treatment of the rot in our ornamental and shade trees consists in the removal of the affected wood and protection of the resultant wound. The progress of decay is relatively slow. Whether the fungus can be eliminated completely is doubtful since it extends into sound wood in small finger-like projections which are hard to determine. Protection of wound in making the major removal of the decay will, however, stop the invasion of the wood by boring insects and ants.

Examination of oak trees in wooded areas where owners have planned to build homes has led the author to suspect the sulphur fungus, or chicken fungus, *Polyporus sulphureus,* to be something of a butt rotter, entering through fire scars, or entering into the basal heartwood of sprout trees from the stump. One stand under observation consisted largely of red oak, all of which were of sprout origin and nearly every tree was hollow. Many of the trees had openings at the base exhibiting evidence of a red heart rot fungus activity. Numerous stumps in the stand were producing the sulphur fungus fruiting bodies in abundance. The report on the condition of the red oak trees was that nothing could be done economically for the affected trees, that they would continue to grow for years except for the dying of branches here and there in the tree, but that they would be subject to windfall from time to time. The builder-to-be gave up his plan to establish a home in this tract of trees.

Another fungus which is active in the root crown and base of trees is known as *Xylaria digitata.* This fungus is capable of killing many hardwood trees such as apple, hawthorn, maple, etc. The resultant decay is a soft grayish-white rot. The fruiting bodies which are seldom seen except in affected woodland trees or arising from roots about stumps are jet black, carbonaceous, finger-like structures from an inch to 3 or 4 inches high. The same difficulty arises in attempting to treat affected trees and control this disease as with all wood rotting fungi which attack the roots and basal portions of the tree.

A fungus which receives considerable attention is the small velvet-stemmed, yellow-capped mushroom or toadstool, *Collybia velutipes.* This fungus is notable for producing clusters of fruiting bodies during warm periods in the winter in the northeastern and north central states. It is capable of causing a white decay of the sapwood of hardwood trees such as maple, horsechestnut, elm, etc., after entering through wounds. It is found mostly carrying on its activities in sapwood at the base of the tree or on roots which have been exposed by mechanical wounding. Sometimes it will be found fruiting higher up on the trunk on exposed wood. A case was called to my attention where a massed cluster of mushrooms were growing out of a small break in an asphaltum paint dressing which covered a lightning bolt wound on an elm tree trunk. This particular case led to some disparagement of the tree expert who had done a fine job except in complete sterilization of the wound prior to painting it. Although easy to control by removal of the affected wood and treatment of the wound in short lived trees such as the horsechestnut and linden, it may be an economically unsound policy to do so. With elm trees, however, several cases called to my attention have been successfully treated.

There are several other root rotting

(*Continued on next page*)

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DIAGNOSIS SERIES No. 3

(*Continued from preceding page*)

fungi which confine their activities to the basal portion of the stem of trees which must, for want of space, be left without discussion. *Fomes annosus* is a serious root rotter but like *Polyporus schweinitzii* just mentioned, is most injurious to coniferous trees growing on poor sites. *Sparassis radicata,* a fungus causing a yellow rot of conifer roots, is important in the northwest.

Crown Gall—This disease whose characteristic symptom is the appearance of woody galls, more or less spherical in shape, averaging from ½ inch to 2½ inches in diameter. These galls which are usually located at the root crown and at the graft union may also appear on all parts of the root system in the upper 6 inches of soil, or, as in the case of poplar and willow, on the stem and branches.

The casual agent is a bacillus called *Bacterium tumefaciens.* This organism enters root and living stem tissues through wounds made by pruning tools, and broken roots in planting operations. The host tissues are stimulated to overgrowth with the resultant woody gall.

Many trees and shrubs are susceptible to infection by the crown gall organism, however apple, pear, quince, peach, both ornamental flowering and orchard species and varieties as well as many other Rosaceous trees and shrubs are most susceptible. A consignment of sycamore maple trees when set out along the streets in Lansing, Michigan, began to fail. It was found upon examination of these trees that they were suffering from a heavy infection of crown gall. It is presumed that they had been growing in a soil heavily infested with the crown gall bacillus.

Failure of thrifty growth without visible reasons leads one to examine the root system where galls, if present, are easily discovered. Control depends on two points: (1) Avoid the planting of infected trees, and (2) avoid the planting of healthy trees in soil where crown gall infected trees have been grown. In cases where nursery stock is suspected of contamination, dipping the roots of the trees into a solution of copper sulphate (½ pound to 1 quart of water) will kill any bacteria which may be adhering to the surface of the roots or the soil attached to the roots. Since these bacteria can live for some period of time in the soil free from host tissues, care must be taken to avoid planting susceptible trees where crown gall has been present. Soil may be sterilized with formaldehyde (1 pint per gallon using ½ gallon per sq. foot). Where formaldehyde is used, the soil must be well aerated before planting is done.

Hairy root, a disease commonly associated with crown gall, is caused by a separate and distinct bacillus. Except for the appearance of the disease, that of the production of a mass of fine roots at the root crown just below the soil surface, it is similar and treatment for its control is the same.

Before leaving the subject of crown gall it is pertinent to mention the gall formations which arise at graft unions. If the cion and stock union is not made properly, these non-parasitic gall growths may form which are deleterious to the future health of the tree and the appearance of the stem. Since the graft union is a wound, it is a possible avenue of entrance for the crown gall bacilli and care must be taken to avoid contamination. Use of zinc oxide tape is effective in reducing inoculation at this place.

Cankers—Basal canker is a disease which affects only Norway maple so far as is now known. The cause agent is the fungus *Phytophthora cambivora.* This fungus also causes the ink disease of chestnut and beech in Europe. Beside the reduction in number and size of leaves on the tree, a canker is found at the base of the trunk. The inner bark, cambium and sapwood are of a reddish brown color, according to P. P. Pirone, the discoverer.

The disease is very destructive to Norway maple and Dr. Pirone advises that infected trees be removed and burned, since no control has been devised as yet by which the affected trees may be saved.

Crown canker is a closely related disease caused by another species of the genus *Phytophthora,* namely, *P. cactorum.* This is also a recently discovered pathogen. It attacks dogwood producing a basal canker at the ground line which eventually girdles the tree. This parasite produces a discolored inner bark region in dogwood similar to the basal canker of maples just mentioned. This particular fungus is also capable of attacking American beech, and several of the maples causing a "bleeding canker" in these trees. It also causes a die back in rhododendron. Excepting in dogwood, the cankered areas are not necessarily at the base of the stem of the tree. Although promising results have been obtained by injection of organic dyes into the stem of the tree, there is no method of control yet established except to remove the trees and destroy them.

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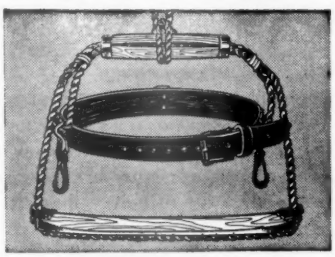
When fruits, leaves or flowers fall from the stem or branch, the layer of cells at the point where they were attached is called the abscission layer. Spraying with FRUITONE keeps this abscission layer green so that premature drop is stopped. The spray must hit the stem or adjacent tissue to be effective.—*Ortho Plant Protection News.*

SAFE-T-SEAT



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TREES IN CAMOUFLAGE

(*Continued from page 7*)

and other man-made construction. As no straight lines appear in nature, obviously any straight line or regular shape is a give-away to the hostile observer. Thus trees are used to great advantage in interrupting or concealing roof ridges, eaves, walls, highways and other obviously man-made installations.

Frequently, the shadows of an installation are more easily observed than the installation itself. Even on the brightest day shadows appear sharply defined and black against the ground, and if these shadows have straight edges they are obviously an indication of the target. However, research has indicated that trees and other natural material are most successful in breaking up these lines. For example, tall objects like radio towers, power transmission towers and tall poles can be reasonably successfully camouflaged with the exception of one characteristic—the shadow. Only planting on the ground has proved successful in absorbing and diffusing these characteristic shadows so easily visible from the air.

Trees are desirable for the concealment of buildings and roads, and for storage and parking areas. When new sites for construction are selected, the preservation of trees and other natural material is a prime consideration, in addition to the planting of other natural materials. While artificial trees may be used in certain instances, they are at best imitations and are usually quickly detectable by means of infra-red photography. (It is of interest that infra-red film clearly differentiates between deciduous and coniferous trees). Additional maintenance and seasonal painting is also required and therefore living plant material should be used wherever possible.

Trees, as an adjunct to camouflage in rear areas, are assuming a role of increasing importance. They are of exceptional value in the hiding and diffusing of outlines of objects on the ground. A well planned village with scattered trees is largely obscured from the air, its outlines are uncertain, and a poor target is the result.

It thus appears that preparation for passive defense from the hazards of the air has many advantages leading to better living; an ever increasing decentralization of our communities, the dispersion of our homes and factories, and an increasing interest in the planting of trees will be the results.

IRON IN THE SOIL

Iron is all-important to plant life if plants are to attain their full beauty of bloom and fine green foliage. Soils containing an excess of lime usually contain iron, also, but the iron is not available to plant life because it becomes instantly absorbed by the calcium lime structure and the presence of the excess lime in the soil quickly renders unavailable any iron which may be applied in a non-soluble form. Therefore, it is necessary to apply iron in suitable amount directly to the plant in the form of a dissolved solution that is quickly available. We recommend Iron Copperous Ferrous:

Dissolve about 2 ounces Iron Copperous Ferrous in 3 gallons of water and pour it liberally around the base of the plants. This method renders it quickly availabel to the plant.

But, in those instances where you wish to make it available over a longer period of time, you can use it dry and mulch it into the soil, in the proportions of about 1 to 1½ ounces to each 3, 4 or 5 year old shrub . . . and proportion it to younger ones accordingly. When you use it in dry form, however, you must water thereafter in order to hasten its availability to the plant to a proper degree, but used in this way it will continue to be available to the plant over a much longer period.—*Destruxol Bulletin.*

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THE TAXPAYER SQUAWKS

By EDWARD A. CONNELL, *B.Sc.*,
Tree Warden
Stamford, Connecticut

There are other phases to municipal shade tree management than entomological, pathological, or physiological. In fact, the person who is an authority on the phosphorus needs of *Quercus* or an expert in the spray control of *Malacosoma disstria* on maple, will find psychological and philosophical problems presenting themselves in municipal arboriculture whose solution is not to be found at all in the writings of Bailey, Stone or Thompson.

The average citizen and property owner is a victim of "schizoid personality" or "split thinking" when two types of trees are involved—those on his own property and those belonging to the municipality in the planting strip in front of his home. Nothing is soo good for the pin oak on his front lawn, but he is sorely troubled too often by the presence of a magnificent oak which forces him to navigate his new low-hung sedan with a bit of caution as he enters his driveway!

Requests for tree removals come to the average tree warden for strange reasons, the most common of which is interference with driving to or from his garage. Removals are also requested because the flaring base of a tree necessitates pedestrians going off the beaten sidewalk seven or eight inches, causing great physical discomfiture! I have had requests to remove sycamores because the "ghostly bark" frightened small children at night and pleas to remove elms because of a belief that Dutch Elm Disease was harmful to cats and dogs!

I had one unusual request about a year ago for the removal of an elm which is structurally sound and vigorous. The abutting property owner reported having a dream in which this elm crashed onto the roof of his house inflicting serious property damage and personal injury. I have had an earnest request for the removal of a Norway maple, a beautiful specimen, because it obstructed the brief and fleeting glimpse in the spring of a flowering magnolia and shadbush from the street!

On one of our rural roads, a row of beautiful cedars is disturbing to one person because these pyramidal evergreens remind her of "an Italian cemetery in a Maxfield Parrish painting." Another resident objects to the pruning out of dead limbs and branches on pin oaks because "pin oak is only in its natural state with dead wood."

There are other complaints and other arboreal requests of a nature sometimes startling. In Stamford, we are trying the experiment of educating the public to the value of street trees. The first step in the process has been the completion of an identification survey on three well-planted roads. A complete record giving the total number of trees and total number of each species on these roads has been distributed and within a short time inexpensive tags giving the technical and common names of the species will be affixed.

This project has had one beneficial effect—it has aroused interest or, at least, curiosity. I was called in recently to settle a five dollar wager between two very non-horticultural citizens, one a broker and the other a radio script writer. The money was placed on the outcome of the correct identification of a tree on one of our surveyed roads. Broker "A" said "American Elm" and Writer "B" said "Hickory." The fact that the specimen was Scotch Elm prevented any gloating by either party, but the case served to inspire Mr. Broker to send his five dollars away for two books on tree identification and Mr. Writer has promised to dramatize shade trees in a half hour radio playlet this fall!

PITTOSPORUM DISEASES

Virus-like diseases were discovered in two species of Pittosporum in addition to the disease in *P. tobira* reported previously. The diseases were found in *P. adphniphylloides* in Butte County (Cal.) and in *P. viridiflorum* in San Mateo County. A third new instance which is suspected of being virus in nature occurred in *P. undulatum* in Ventura County. Surveys of the disease in *P. tobira* were continued and it may be reported that the disease in *P. tobira* is distributed concurrently with the distribution of the host in southern California.

It is interesting to note that the native habitats of the four species are widely separated. None of the species are natives of the American continents. The native habitat of *P. tobira*, according to Bailey, is in Japan, of *P. undulatum* in Australia, of *P. viridiflorum* in South Africa, and of *P. daphniphylloides* in China and India. Pittosporum species seem to be naturally at home in the Pacific Islands, Australian Continent and in eastern and southern Asia. Sherf recently reported nineteen species and varieties in the Hawaiian Islands. The importance of the virus diseases in Pittosporum lies in the probability of their transmissibility to other genera of hosts of greater economic value.—*Calif. D. of A. Bulletin.*

Should you observe indications of wilt or similar disorders on any one of the species mentioned above, report the occurrence either to Mr. Pierre Miller, Pathologist, University of California at Los Angeles, or Dr. D. G. Milbrath, Plant Pathologist, Dept. of Agriculture, Sacramento, California.

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City Arborists' Column

(*Continued from page* 8)

R. K. Alman, City Arborist, Cedar Rapids, Iowa.

Karl Dressel, Forestry Dept., Michigan State College, East Lansing, Mich.

M. S. Brown, Shade Tree Supt., Teaneck, N. J.

Joseph Frisby, Supt. of Parks, Richmond, Md.

Carl J. Schiff, Arboriculturist, Dept. of Parks, Brooklyn, N. Y.

L. F. Ealy, Arborist, Ohio State University, Columbus, Ohio.

J. C. Kenealy, Tree Warden, Ardmore, Pa.

J. D. Dacey, City of Shaker Heights, Ohio.

W. P. Lanphear, Cleveland Heights, Ohio.

V. Leslie Hebert, Tree Warden, Weymouth, Mass.

Howard G. Muellner, City Forester, Wauwatosa, Wis.

Carl Fenner, Asst. City Forester, Lansing, Mich.

Ivan H. Smalley, Dendrologist, Richmond, Va.

Carl P. Witte, City Forester, Newark, N. J.

W. E. Rose, Village Forester, Hinsdale, Ill.

Edw. H. Scanlon, Consulting Arborist, Editor of TREES, Santa Monica, Calif.

Hollis J. Howe, City Forester, Baltimore, Md.

Sam Heer, City Forester, Pittsburgh, Penn.

Any City Foresters, Tree Wardens, Park Superintendents, etc., who are interested in going along with the group can address this column care of TREES.

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Returns Heavy In Street Tree Survey

In the past several weeks there has been quite a flurry of activity in the National Street Tree Survey being conducted by "TREES."

This survey started two years ago and is rapidly approaching its climax. It will contain a wealth of information when the data are compiled into the eleven Master Charts covering the United States.

Charts have recently been received from the following: S. H. Anderson, Supt. of Parks, Aberdeen, S. Dak.; Herbert Munroe, Mitchell, S. Dak.; Fred Guirey, State Landscape Architect, Phoenix, Ariz.; Leslie H. Kiel, Supt. of Parks, Rapid City, S. Dak.; H. G. Muellner, Park Dept., Wauwatosa, Wis.; Carl G. Krueger, Forest Supervisor, Cody, Wyo.; Leslie L. Goodrich, Pittsfield, Mass. (for Florida Sec., Jacksonville area); Jack Kenealy, Tree Warden, Ardmore, Pa; R. G. Williams, Supt. of Parks, Greensboro, N. C; F. W. Roewekamp, Landscape Engineer, Dept. of Parks, Los Angeles; Robt. E. Tillgren, City Forester, Brockton, Mass.; W. H. Wright, Supt. Parks & Trees, Gainesville, Fla.; A. D. Barnes, Supt. Dade County Parks, Miami, Fla.; Victor G. Anderson, Supt. of Parks, Stockton, Calif.; L. A. Eichhorn, Dept. of Parks, Bay City, Mich.; Erwin L. Troeger, Assist. Supt. of Parks, Santa Monica, Calif.; J. T. Allen, Supt. of Parks, Glendale, Calif.; John L. Linder, Supt. of Parks, Palo Alto, Calif.

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Upright Elm and Beech

(*Continued from page* 9)

Blue Beech or Hornbeam, which varies from a shrub to a small tree throughout the United States east of the Rocky Mountains, has few characteristics of branch formation to recommend its use as a street tree. In maturity its branches are long, crooked, very irregular and often pendulous. These growth habits are not desirable for formal planting, although this tree does lend itself well for bordering arbor walks and other park locations. Still, this species does have some qualities which are always of merit in public plantings.

The tree is practically immune to breakage from wind or sleet, as the wood is hard, strong and resilient. It is notably free from insect pests and fungi diseases.

All things considered, *Carpinus caroliniana* would prove a valuable addition to those species well adapted for street embellishment were it not for its lack of symmetric growth. Hence it but remained for a variety possessing growth habit conducive to pleasing contour to be discovered and propagated. This has been done.

In Durand-Eastman Park at Rochester, N. Y., there may be found beautiful specimens of this new form. A natural variation discovered by Bernard H. Slavin in western New York was grafted to caroliniana stock and has proven to be a very fine upright type. The tree pictured is twenty-one years old, fourteen feet high, six feet at its widest branching, beautifully urnlike in contour with branches and densely sprayed branchlets definitely ascendent. Now recorded as B. H. Slavin No. 7, this new form could be appropriately named *Carpinus caroliniana ascendens.*

Upright Blue Beech would surely make a fine choice for public planting where a small, full-bodied, upright tree of symmetric structure is desired.

Evans: Street Trees

(*Continued from page* 8)

terial on his property, an imposing line of trees may be seriously broken into by the whim of some owner who insists on taking out one or more trees.

There are other problems connected with auto entrances and means of traversing the curb rise that are problems for the Engineering department. The making of what is called a wide roll curb has been the solution to date, making unnecessary the cutting into or bridging of the curb.

Altogether planting street trees upon private property is not only an interesting method in itself, but it offers a solution for modern street construction, at the same time preserving the green tree border which means so much in the use and appearance of the street in summer.

NURSERIES FOR UPRIGHT TREES

(*Continued from page* 5)

lender Nurseries Co., Tippecanoe City, Ohio; F & F Nurseries, Springfield, N. J; Hicks Nurseries, Inc., Westbury, L. I., N. Y; Kingsville Nurseries, Inc., Kingsville, Md; Swain Nelson & Sons Co., Glenview, Ill; Princeton Nurseries, Princeton, N. J.

Carpinus betulus fastigiata is handled, but no sizes specified, by Berryhill Nursery Co., Box 696, Springfield Ohio; Bohlender Nurseries Co., Tippecanoe City, Ohio; F & F Nurseries, Springfield, N. J; Greening Nursery Co., Monroe, Mich; Hilltop Nurseries, Casstown, Ohio; the W. A. Natorp Co., Cincinnati, Ohio; and the Siebenthaler Co., Dayton, Ohio.

There are numerous other varieties of fastigiate trees that we have not listed and which may be available from nurseries in various parts of the country. We shall be very grateful to anyone knowing of such a source to inform us so that we may pass it on to the readers of TREES.

When ordering from any of these nurseries, please inform them that the information was obtained from TREES, the *Journal of American Arboriculture.*

Bleeding Necrosis of Sweet Gum

P. P. Pirone and T. R. Bender

Aside from a few wood-decay fungi of minor importance, no highly destructive fungus parasite has been heretofore reported on sweet gum (*Liquidambar styraciflua*). Investigations on an apparently new bark and sapwood disease of this highly-prized tree have been conducted during the past four months. The work has now progressed sufficiently to warrant a report on this destructive disease so that arborists and nurserymen may recognize it.

At present, the known areas of infestation center around Roselle Park and Moorestown, N. J. and around New Brighton and Great Kills, Staten Island; the latter being not only the center of highest infestation but also the area having the heaviest population of native sweet gums. Trees in the vicinity of Westfield and Fort Monmouth, suspected of having the same disease, have been reported to the authors by various tree-men, but these trees have not yet been examined.

Symptoms

The most striking symptom, readily visible even at some distance, is the profuse bleeding of the bark usually at or a few feet above the soil line. The bleeding, however, has been observed occasionally on some trees as high as 20 feet on the main trunk and on many of the large, lower branches. The exudation appears as though heavy motor oil had been poured over the bark. It may originate at some artificially-induced injury, but as a rule, develops from points where no external injuries are visible. As many as 12 distinctly separate areas have been found bleeding on a single trunk at one time. Usually, however, only one or two extensively bleeding areas are found on each trunk.

Infected trees often exhibit undernourished foliage and more or less extensive dying-back of terminal branches by the time profuse bleeding is visible on the trunk. A few trees were noticed which, despite some bleeding on the lower trunk, maintained normal foliage and appeared in otherwise vigorous condition.

The bark bleeding symptom cannot entirely be relied upon inasmuch as sweet gums are known to bleed when they are subjected to some unfavorable treatment. The condition of the inner bark and sapwood beneath the oozing areas is a more reliable symptom. The inner bark of diseased trees is dark reddish brown with an occasional pocket containing a white, crystalline-like solid. In advanced stages of infection, the sapwood also exhibits a dark reddish brown discoloration to a depth of three or four rings. The discoloration was rarely found in the heartwood. The few isolations attempted from discolored heartwood failed to yield the causal fungus.

Death of the upper portions of the tree may occur slowly with progressive dying through the season, or the entire top may die within a relatively short time. The leaves of one tree emerged normally in the spring of 1941 but wilted completely within a ten-day period in early June. The entire top was dead and completely dry within another two weeks.

Until further research is conducted on the imperfect stage, or until the perfect stage of the fungus is found, the causal fungus is tentatively identified as *Dothiorella Berengeriana* or a closely related species.

Control

No control measures have yet been developed because of lack of time and the apparent newness of the disease.

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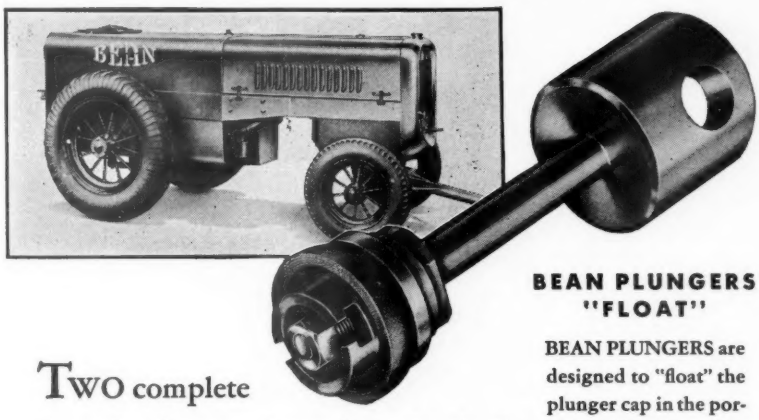

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